CLAIMS

1. A process for producing a heat-treated active carbon for use in denitration which comprises heat-treating a raw active carbon at 600 to 1,200°C in a non-oxidizing atmosphere so as to remove oxygen-containing functional groups present at the surfaces thereof and thereby reduce the atomic surface oxygen/surface carbon ratio to 0.05 or less.

2. A process for producing a heat-treated active carbon for use in denitration as claimed in claim 1 wherein said raw active carbon comprises raw active carbon fibers.

3. A heat-treated active carbon for use in denitration which is produced by a process as claimed in claim 1, said heat-treated active carbon having an atomic surface oxygen/surface carbon ratio of 0.05 or less.

4. A heat-treated active carbon for use in denitration as claimed in claim 3 wherein said raw active carbon comprises raw active carbon fibers.

5. A process for producing a heat-treated active carbon for use in denitration which comprises heat-treating a raw active carbon at 600 to 1,200°C in a non-oxidizing atmosphere and activating the surfaces thereof with sulfuric acid or nitric acid to impart oxidizing oxygen-containing functional groups thereto.

6. A process for producing a heat-treated active carbon for use in denitration as claimed in claim 5 wherein said raw

active carbon comprises raw active carbon fibers.

7. A heat-treated active carbon for use in denitration which is produced by a process as claimed in claim 5.

8. A heat-treated active carbon for use in denitration as claimed in claim 7 wherein said raw active carbon comprises raw active carbon fibers.

9. A process for producing a heat-treated active carbon fibers for use in the denitration of exhaust gas as claimed in claim 2 or 6 wherein said raw active carbon fibers are active carbon fibers derived from pitch.

10. Heat-treated active carbon fibers for use in the denitration of exhaust gas as claimed in claim 4 or 8 wherein said raw active carbon fibers are active carbon fibers derived from pitch.

11. A denitration method which comprises bringing exhaust gas containing nitrogen oxides and not more than 80% of water as water vapor, and NH_3 gas having the same concentration as the nitrogen oxides into contact with a heat-treated active carbon for use in the denitration of exhaust gas as claimed in any one of claims 3, 4, 7 and 8, at a temperature ranging from ordinary temperature to 150°C, in order to reduce the nitrogen oxides selectively and thereby decompose them to nitrogen and water.

12. A denitration method as claimed in claim 11 wherein a higher degree of denitration of nitrogen oxides having a low

temperature and a low concentration is performed at the outlet of an exhaust gas treating apparatus or the outlet of a boiler.

13. A denitration system using active carbon, said denitration system comprising a first packed reactor which is packed with a heat-treated active carbon produced by heat-treating a raw active carbon at a temperature in the range of 600 to 1,000°C, and a second packed reactor which is located downstream thereof and packed with said heat-treated active carbon, whereby exhaust gas and ammonia (NH_3) are introduced into said first packed reactor so as to bring nitrogen oxides (NO_x) present in the exhaust gas into contact with the ammonia and remove the nitrogen oxides by the continuous selective reduction of them to nitrogen (N_2), and any excess ammonia is recovered by adsorption in said second packed reactor.

14. A denitration system using active carbon as claimed in claim 13 wherein exhaust gas is alternately introduced into said first packed reactor and said second packed reactor so as to perform denitration and ammonia adsorption repeatedly.

15. A denitration system using active carbon, said denitration system comprising a denitrator packed with a heat-treated active carbon which is produced by heat-treating a raw active carbon at a temperature in the range of 600 to

1,000°C, and first and second ammonia adsorbers located before and behind said denitrator, respectively, whereby exhaust gas containing nitrogen oxides is alternately introduced through any one of said first and second ammonia adsorbers, ammonia (NH_3) is introduced at a position between said first or second ammonia adsorber and said denitrator, nitrogen oxides (NO_x) present in the exhaust gas are brought into contact with said heat-treated active carbon placed in said denitrator and removed by the continuous selective reduction of them to nitrogen (N_2), and any excess ammonia is recovered by adsorption in the adsorber located downstream of said denitrator.

16. A denitration system using active carbon as claimed in any of claims 13 to 15 wherein said raw active carbon comprises carbon fibers derived from polyacrylonitrile or pitch.

17. A denitration system using a heat-treated active carbon for use in denitration, said denitration system comprising a first packed reactor which is packed with a heat-treated active carbon for use in denitration that is produced by heat-treating a raw active carbon at 600 to 1,200°C in a non-oxidizing atmosphere so as to remove oxygen-containing functional groups present at the surfaces thereof and thereby reduce the atomic surface oxygen/surface carbon ratio to 0.05 or less, and a second packed reactor which is

located downstream thereof and packed with said heat-treated active carbon for use in denitration, whereby exhaust gas and ammonia are introduced into said first packed reactor so as to bring nitrogen oxides (NO_x) present in the exhaust gas into contact with the ammonia and remove the nitrogen oxides by the continuous selective reduction of them to nitrogen (N_2), and any excess ammonia is recovered by adsorption in said second packed reactor.

18. A denitration system as claimed in claim 17 wherein said raw active carbon comprises active carbon fibers derived from polyacrylonitrile or pitch.

19. A denitration system using a heat-treated active carbon for use in denitration, said denitration system comprising a first packed reactor which is packed with a heat-treated active carbon for use in denitration that is produced by heat-treating a raw active carbon at 600 to 1,200°C in a non-oxidizing atmosphere and activating the surfaces thereof with sulfuric acid or nitric acid to impart oxidizing oxygen-containing functional groups thereto, and a second packed reactor which is located downstream thereof and packed with said heat-treated active carbon for use in denitration, whereby exhaust gas and ammonia are introduced into said first packed reactor so as to bring nitrogen oxides (NO_x) present in the exhaust gas into contact with the ammonia and remove the nitrogen oxides by the continuous

selective reduction of them to nitrogen (N_2), and any excess ammonia is recovered by adsorption in said second packed reactor.

20. A denitration system as claimed in claim 19 wherein said raw active carbon comprises active carbon fibers derived from polyacrylonitrile or pitch.